

Abstract Submitted  
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**Angle resolved Raman Spectroscopy of RuCl<sub>3</sub> thin layers**<sup>1</sup> ISAAC MORALES, Texas Tech University, Lubbock, TX, BOWEN YANG, ADAM TSEN, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada, RUI HE, Texas Tech University, Lubbock, TX — Alpha-RuCl<sub>3</sub> is a layered candidate material to host the Kitaev quantum spin liquid. However, the magnetic ground state of RuCl<sub>3</sub> exhibits a zigzag antiferromagnetic (AFM) order, suggesting deviations from the pure Kitaev model. The in-plane zigzag AFM state corresponds to the orientation of the honeycomb lattice structure, whereas a method to easily determine the crystallographic axes for the exfoliated RuCl<sub>3</sub> has not been established. We used angle resolved Raman spectroscopy to determine the in-plane crystal axes of exfoliated RuCl<sub>3</sub>. Samples were rotated in the xy-plane of the honeycomb lattice, and Raman spectra were taken in cross and parallel polarization configurations. By monitoring the Raman intensity from one of the A<sub>g</sub> modes as a function of the rotational angle, we can determine the b-axis of the RuCl<sub>3</sub> crystal. Our study provides a nondestructive and convenient method for determining the crystal orientation of RuCl<sub>3</sub>.

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